

Handout by Ted Rohan

7/23/07

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Estimated Contribution to Soil Contamination
Due to Tritium Releases from Returned Sign Disassembly
Safety Light, Inc., Bloomsburg, Pa.

DRAFT 7/22/2007
(pending further parameter
and method refinement)

Source Term Estimation:

Data Period: 2000 to mid-2007	6.5 years
# Signs disassembled:	24248 signs
# tubes disassembled (12 /sign):	290976 tubes
# Curies/tube:	1 Ci H-3
# of broken tubes	136 tubes
average release rate	9 Ci H-3/yr

(from site sampling data 1999-2006)

Estimated Ground Deposition:

Plume Centerline deposition using atmospheric Stability Class D

(from LLNL Hotspot code V2.05 in chart below):

x -Distance from release point:	60 meters
Short-term deposition at x	90 uCi/m ² per Ci HTO released

Long term Average deposition integrated over 360 degrees:

Effective plume width @ x	20 meters
Circumference @ x	376.8 meters
Long-term deposition @ x	5 uCi/m ² per Ci HTO released

Other assumptions:

% oxide in GTLS	2 % HTO
Effective migration depth in soil	2 meter
Soil density	1 g/cc

Resultant tritium concentration in soil at point of interest

0.05 pCi/g per Ci released

Addition to tritium in soil each year of operation

0.4 pCi/g per year

g 72 Ci of broken tubes/yr), i.e., production rate:

Loss of tritium from soil due to decay, diffusion to
deeper soil, and runoff (loss rate as effective halflife):

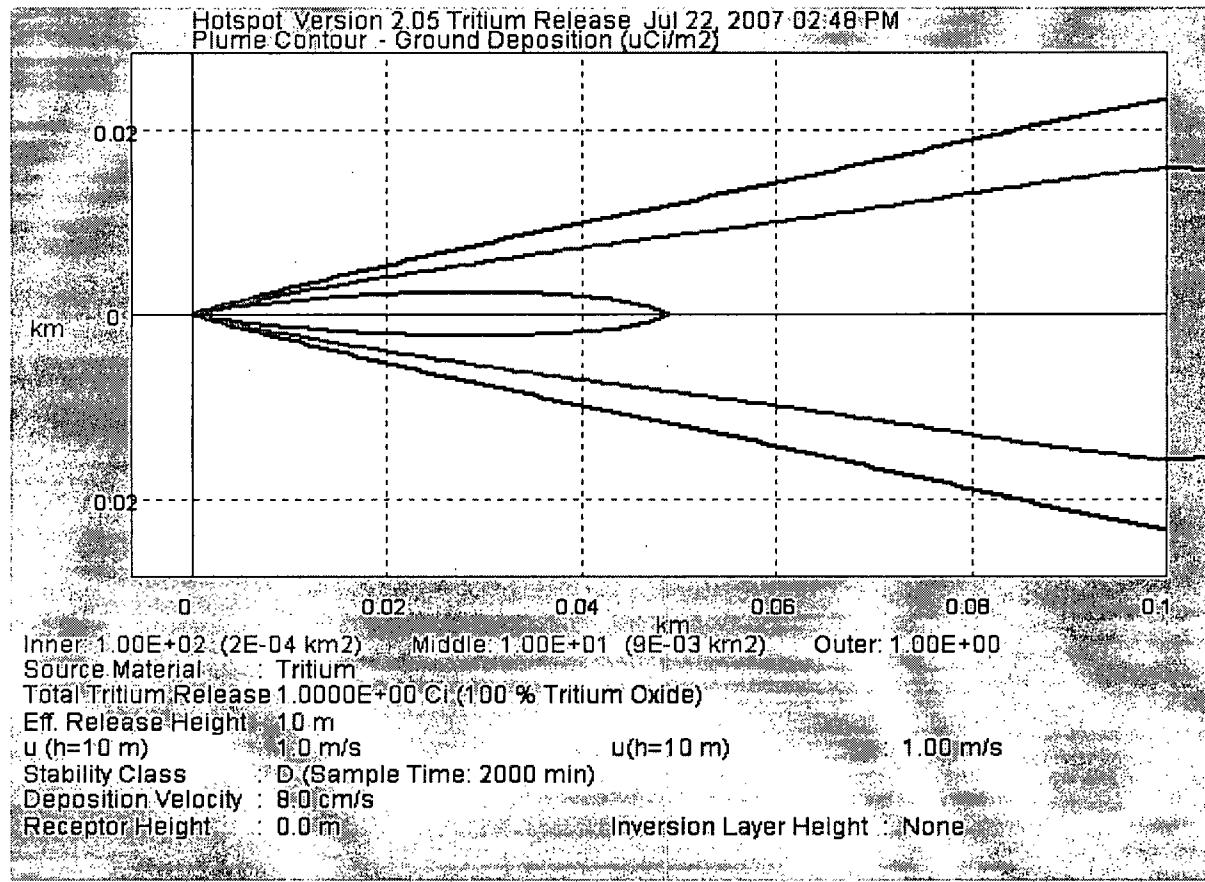
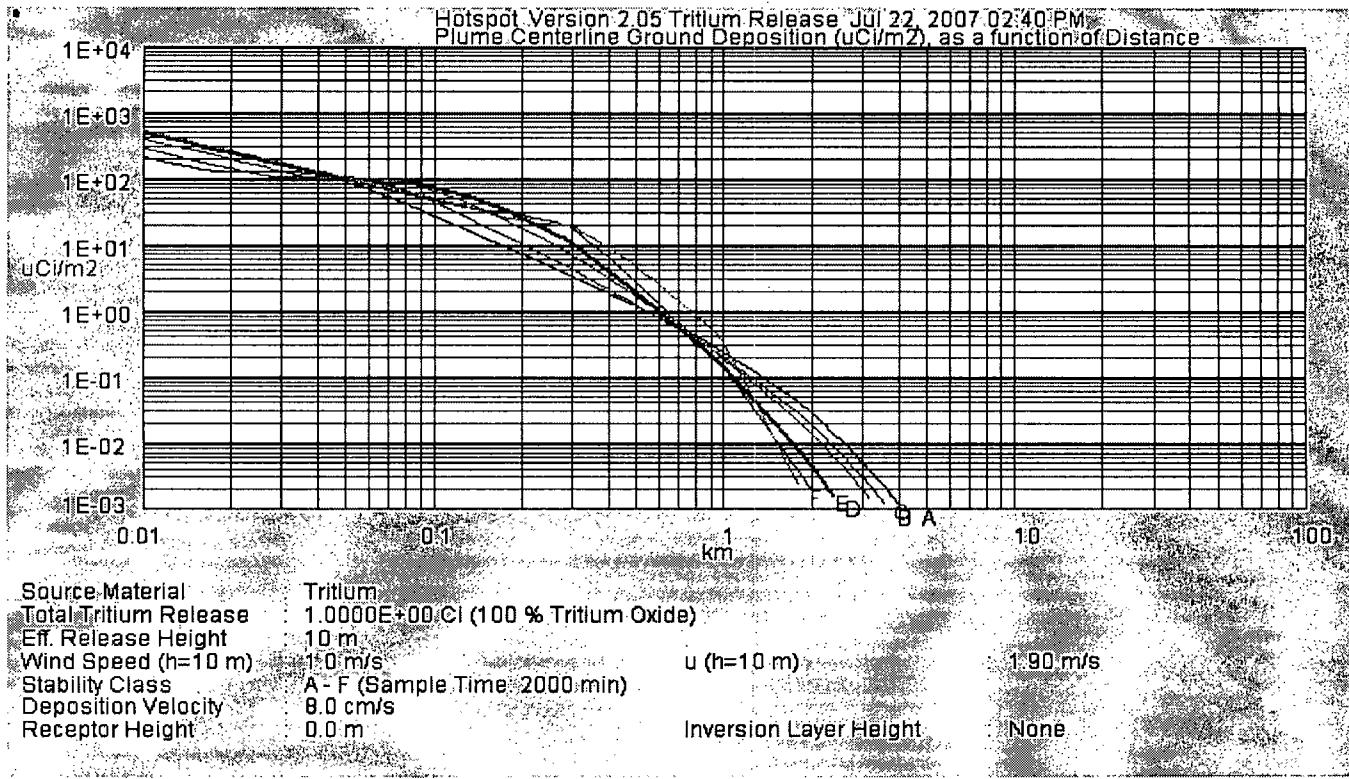
6 yr

Time of releases: 1998 to 2007

9 yr

Tritium concentration in soil in 2007 due to gaseous emissions:

1.9 pCi/g



7/23/2007 Meeting at USEPA with Isolite

2012MAY30

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